National Institute of Environmental Health Sciences

Health risks of climate change: An assessment of uncertainties and its implications for adaptation policies

Author(s): Wardekker JA, de Jong A, van Bree L, Turkenburg WC, van der Sluijs JP
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Abstract:

BACKGROUND: Projections of health risks of climate change are surrounded with uncertainties in knowledge. Understanding of these uncertainties will help the selection of appropriate adaptation policies. METHODS: We made an inventory of conceivable health impacts of climate change, explored the type and level of uncertainty for each impact, and discussed its implications for adaptation policy. A questionnaire-based expert elicitation was performed using an ordinal scoring scale. Experts were asked to indicate the level of precision with which health risks can be estimated, given the present state of knowledge. We assessed the individual scores, the expertise-weighted descriptive statistics, and the argumentation given for each score. Suggestions were made for how dealing with uncertainties could be taken into account in climate change adaptation policy strategies. RESULTS: The results showed that the direction of change could be indicated for most anticipated health effects. For several potential effects, too little knowledge exists to indicate whether any impact will occur, or whether the impact will be positive or negative. For several effects, rough 'order-of-magnitude' estimates were considered possible. Factors limiting health impact quantification include: lack of data, multi-causality, unknown impacts considering a high-quality health system, complex cause-effect relations leading to multi-directional impacts, possible changes of present-day response-relations, and difficulties in predicting local climate impacts. Participants considered heat-related mortality and non-endemic vector-borne diseases particularly relevant for climate change adaptation. CONCLUSIONS: For possible climate related health impacts characterised by ignorance, adaptation policies that focus on enhancing the health system's and society's capability of dealing with possible future changes, uncertainties and surprises (e.g. through resilience, flexibility, and adaptive capacity) are most appropriate. For climate related health effects for which rough risk estimates are available, 'robust decision-making' is recommended. For health effects with limited societal and policy relevance, we recommend focusing on no-regret measures. For highly relevant health effects, precautionary measures can be considered. This study indicated that analysing and characterising uncertainty by means of a typology can be a very useful approach for selection and prioritization of preferred adaptation policies to reduce future climate related health risks.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3506559

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Extreme Weather Event, Food/Water Quality, Temperature

Air Pollution: Allergens, Particulate Matter

Extreme Weather Event: Drought, Flooding

Food/Water Quality: Chemical, Pathogen

Temperature: Fluctuations

Geographic Feature: ☑

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : Netherlands

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Cardiovascular Effect, Dermatological Effect, General Health Impact, Infectious Disease, Mental Health/Stress, Morbidity/Mortality, Respiratory Effect

Infectious Disease: Vectorborne Disease

Vectorborne Disease: General Vectorborne

Mental Health Effect/Stress: Other Mental Disorder

Respiratory Effect: Asthma

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type: ☑

format or standard characteristic of resource

Policy/Opinion, Research Article

Resilience: ☑

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content